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MISS MACKIE'S NOVA OPHIUCHI

(α 18^h 10^m, δ + 11° 35')

BY E. E. BARNARD

This star has presented a more nebulous appearance than *Nova Aquilae*. When I first observed it on 1919, October 28th, it was 8^m.5 on the BD scale and was slightly yellow. The in-focus and out-of-focus images showed nothing different from that of an ordinary star. There was nothing in any way suggestive of a nova. On November 1st the star was yellowish with no central core in the out-of-focus image. Its brightness had not changed. On this date I measured its position with respect to the star Leipzig A. G. C. 1 6468. Position of the nova:

$$1919.0 \quad \alpha 18^h 10^m 20^s.45, \quad \delta + 11^\circ 35' 15''.8$$

On November 4th it was a magnitude brighter. The out-of-focus image seemed to have a red or scarlet central core, but it was too low to tell much about it.

November 11th. It was less bright. In focus the star was yellowish with a fringe of scarlet rays. Out of focus the image was a beautiful scarlet, small and well-defined, surrounded by a bluish or grayish green ray system. The glow about it seemed to be optical. There appeared to be no nebulosity about it. Its appearance was that of a typical nova.

November 18th. The out-of-focus image did not show any central core.

December 2d. The star was a strong yellow in the 40-inch. The out-of-focus image was red but was shifted from the center by the low altitude.

1920, May 13th. Very closely nebulous in appearance, like a small, bright, whitish nebula. The focus was the same as for the other stars. There was no core to the out-of-focus image. One would single it out at once from all the other stars from its appearance.

May 25th. Very white and hazy, like a very small, bright stellar nebula.

June 5th. It appeared to be a very small stellar nebula, much like some of the Wolf-Rayet stars. There was no difference of focus from the ordinary stars, but it could not be brought to a definite focus. It would readily be taken for a small stellar nebula.

June 10th. The stellar image could scarcely be seen for the brightness of the nebulosity in which it was imbedded. The focus was 4 mm. outside that for the ordinary star. The diameter of the nebulosity was $2''.3$, in the center of which the star itself appeared as a very small point of light. A feebler glow extended farther out. The nova appeared like a duplicate of *Nova Aquilae*, but somewhat fainter and smaller. To all appearance it was a small nebula.

June 12th. It was a very small stellar nebula. Out of focus the stellar image could be seen imbedded in the close brightish glow. The diameter of this glow was $2''.4$.

June 17th. The star was densely hazy like a very small stellar nebula.

June 24th. The nova was involved in a close, dense nebulosity. The focus was much outside that for an ordinary star.

July 8th. It resembled a small nebula in which the star was almost lost. The diameter of the nebulosity was $1''.5$. The best focus was 4 mm. outside that for a star.

July 10th. It was a small stellar point in a very small dense nebula. At 5 mm. outside the regular focus it appeared like a minute nebula $1''$ - $2''$ in diameter, with a tiny nucleus.

Following are the determinations of magnitude with the 4-inch finder of the 40-inch telescope. Since it ceased to be visible in the finder I have compared it with small stars near; but as these observations are being continued, only the finder observations of brightness will be given here. They are on the BD scale.

MAGNITUDES OF NOVA OPHIUCHI WITH THE 4-INCH FINDER

	M		M
1919, October 28....	8.5	1919, November 18....	9.3
1919, November 1....	8.5	1919, November 19....	9.0
1919, November 4....	7.5	1919, November 22....	9.2
1919, November 11....	8.7	1919, November 23....	8.8
1919, November 12....	8.7	1919, December 2....	9.2
1919, November 17....	8.6		

The most striking change was about November 4th, when it had risen a whole magnitude.

It is probable that the larger glow mentioned about *Nova Aquilae* and about *Nova Ophiuchi* is instrumental and has nothing to do with any nebulosity about either star.

Yerkes Observatory,
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1920 July 12.